Remarks

Claims 1-14, 16, 18, 20, and 22-27 are pending in the application with claims 12, 20, 22, 23, and 25 amended, claim 27 added, and claim 17 cancelled herein. Applicant asserts that the present specification supports all of the claim amendments. The amendment to claim 20 is supported at least by page 7, lines 15-23. The amendment to claim 22 is supported at least by page 3, lines 10-12; page 3, line 28 to page 4, line 4; and page 6, line 32 to page 7, line 14. The amendment to claim 23 is supported at least by page 6, lines 1-5. The amendment to claim 25 is supported at least by page 3, lines 4-9 and page 6, lines 1-5. New claim 27 is supported at least by page 7, line 33 to page 8, line 6. The amendment to claim 12 is discussed below.

Applicant notes that at least claims 1 and 24, previously presented to the Office, were improperly rejected in the Office Action. Also, the Office apparently declined to examine claims 1 and 24 in light of the prior art. Any new ground of rejection of claims 1 or 24 must be presented in a non-final office action.

The specification is amended herein to insert an omitted word. Both the need for the amendment and the nature of the amendment are readily apparent from the context of the original paragraph. Applicant asserts that the amendment does not add new matter.

Claims 1-14, 16-18, 20, 22, 23, 25 and 26 stand rejected under 35 USC 112, first paragraph, as failing to comply with the written description requirement by setting forth optical density fading of less than 22.6%, setting forth optical density fading for powder toner (as in claim 18), setting forth optical density fading of less than 10.5% (as in claim 12), and setting forth a Chroma value of less than 3.45 (as in claim 13). Without admitting to the propriety of the rejection, claims 22, 23, and 25 are amended herein to remove the allegedly offending subject matter. Applicant requests withdrawal of the written description requirement with regard to such claims. Applicant requests reconsideration of the written description requirement with regard to claims 1, 12, 13, and 18.

Applicant notes that the table on page 5 compares the "Inventive Toner" with K3.1 prior art toner. The optical density fading obtained for the "Inventive Toner" is

less than 22.6%, the optical density fading of K3.1. Page 6, lines 1-25 of the specification describes improvement in light fastness, generally, and improvement in optical density fading, specifically, over K3.1 toner. A variety of options are disclosed for selection of colored pigments to provide "improved fade resistance" (line 23) with respect to K3.1 toner. Specific pigments are listed. Page 6, line 26 to page 7, line 29 describes in detail the selection of "fade resistant 'balancing' pigments" (page 6, line 28) with the recognition "that not all of these pigments are equally colorfast" (page 7, line 24) and that 2, 3, 4, or more pigments may be selected.

No question exists among those of ordinary skill that the present specification discloses an improvement in black toner. Such improvement is expressly referenced against K3.1 toner (the "reference toner", page 6, line 12 and elsewhere). That is, the improvement is made over the properties of K3.1 toner listed in the page 5 table. Indeed, all of the discussion on page 6, line 26 to page 7, line 29 describing "the practice of the invention" (page 6, line 29) is readily understood to indicate how to obtain black toner that is more light fast than K3.1 toner using "fade resistant 'balancing' pigments." Since K3.1 toner is the "reference toner," the understood standard for sufficiently improved optical density fading is appropriately compared to the optical density fading of 22.6% for K3.1 toner. If the optical density fading is equal to or greater than 22.6%, then, by the express description throughout the present specification, no improvement exists in optical density fading.

Applicant asserts that those of ordinary skill appreciate a description of numerous black toner particle compositions exhibiting optical density fading less than that of K3.1 toner (see further discussion below regarding enablement). Page 7, lines 24-29 summarily list considerations used to determine which pigments to use with a given carbon black. Since a variety of "substantially light fast pigment groups" (page 7, line 15) are provided for selection and "not all of these pigments are equally colorfast," a variety of levels of improvement in optical density fading less than 22.6% may result.

The specification provides one actual example, exhibiting optical density fading of 10.3% within the claimed range. However, the present specification expressly

expands the improvement to fading other than 10.3%. Since the specification references improvement in optical density fading compared to 22.6%, instructs that the degree of color fastness varies among pigments, and describes numerous options for making black toner particles with improved fade resistance compared to 22.6%, Applicant asserts that the specification adequately supports claim 1.

Amended claim 12 depends ultimately from amended claim 1 and sets forth optical density fading of from 10.3% to less than 22.6%. As supported by MPEP 2163.05 (III), where the original specification describes a broad numerical range for a limitation, the specification may be found also to support a lesser included range. Since the specification supports optical density fading of less than 22.6%, Applicant asserts that it also supports optical density fading of from 10.3% to less than 22.6%, encompassing the specific example of 10.3% as one endpoint.

Claim 13 sets forth a change in the Chroma value of less than 3.45. At least page 6, lines 12-25 of the present specification discuss the change in color neutrality of the "Inventive Toner" in the table on page 5 compared to K3.1 toner. Change in color neutrality is another aspect of light fastness. Since 3.45 is the change in Chroma value for K3.1 toner, it follows from the discussion above regarding optical density fading that the present specification contains a written description of a change in Chroma value of less than 3.45, as set forth in claim 13.

Claim 18 sets forth a black powder toner including the toner particles of claim 1. Page 8, lines 18-21 of the present specification expressly support the subject matter of claim 18. As such, the present specification contains a written description of claim 18.

Applicant requests withdrawal of the written description rejection in the next Office Action.

Claims 1-14, 16-18, 20, and 22-26 stand rejected under 35 USC 112, first paragraph as lacking enablement in the specification by setting forth a range encompassing very small amounts of optical density fading for both liquid and dry toners. Applicant notes that claim 24 previously pending before the Office does not include any limitation to optical density fading and is directed to liquid toner.

Consequently, it is not proper to reject claim 24 as lacking enablement and Applicant requests withdrawal of the claim 24 rejection. Without admitting to the propriety of the rejection, claims 12, 22, 23, and 25 are amended herein to remove the allegedly offending subject matter. Applicant requests withdrawal of the rejection with regard to such claims. Applicant requests reconsideration of the enablement requirement with regard to claim 1.

The Federal Circuit has held "that a patent specification complies with the statute even if a 'reasonable' amount of routine experimentation is required in order to practice a claimed invention, but that such experimentation must not be 'undue.'" Enzo Biochem, Inc. v. Calgene, Inc., 52 USPQ 2d 1129, 1135-36 (Fed. Cir. 1999). Several factors may be considered to determine whether a disclosure would require undue experimentation, although all factors need not be reviewed. Id. The factors include: "(1) the quantity of experimentation necessary, (2) the amount of direction or guidance presented, (3) the presence or absence of working examples, (4) the nature of the invention, (5) the state of the prior art, (6) the relative skill of those in the art, (7) the predictability or unpredictability of the art, and (8) the breadth of the claims." Id.

Applicant previously asserted that particular portions of the present specification along with the knowledge of those of ordinary skill is more than adequate such that a reasonable amount of routine experimentation will suffice to practice all of the claimed inventions. Applicant reminds the Office that a patent need not teach, and preferably omits information that is well known in the art. MPEP § 2164.01; In re Buchner, 929 F.2d 660, 661, 18 USPQ2d 1331, 1332 (Fed. Cir. 1991).

The test of enablement is not whether any experimentation is necessary, but whether, if experimentation is necessary, it is undue. MPEP § 2164.01; In re Angstadt, 537 F.2d 498, 504, 90 USPQ 214, 219 (CCPA 1976). Given the abundance of information available to those of ordinary skill, Applicant asserts that review by those of ordinary skill of the collective, publicly available information will minimize any experimentation such that only a reasonable amount of experimentation is necessary, if any at all.

The fact that experimentation may be complex does not necessarily make it undue, if the art typically engages in such experimentation. MPEP § 2164.01; In re Certain Limited-Charge Cell Culture Microcarriers, 221 USPQ 1165, 1174 (Int'l Trade Comm'n 1983), aff 'd. sub nom., Massachusetts Institute of Technology v. A.B. Fortia, 774 F.2d 1104, 227 USPQ 428 (Fed. Cir. 1985). Applicant notes that the art typically engages in experimentation to produce almost any toner composition. Routine experimentation is widely known to involve varying the quantity and type of components in statistically designed experiments, producing various toner compositions, measuring toner properties, and focusing in on desired parameters using statistical evaluations.

As stated on page 9 of the Office Action, the level of skill is high in the toner art. The Office Action also alleges that predictability is low. However, predictability is not of concern for the toner particles of claim 1. Page 7, lines 15-23 of the present specification lists "substantially lightfast pigment groups" sufficient to obtain optical density fading of less than 22.6%, as claimed. The list includes commercially available pigments of Benzimidazolone, Isoindolinone, Isoindoline, Phthalocyanine, Perylene, Perinone, Diketopyrolo pyrrole (DPP), Thioindigo, Dioxazine, Iron Oxide, Lead Chromate, Chromium Oxide, and Ultramarine. Amended claim 20 sets forth the list of pigment groups. Page 6, line 33 to page 7, line 4 additionally lists numerous specific purple or blue pigments that are suitable.

Applicant notes that claim 1 is not limited to a particular level of color neutrality. Hence, many black toner particles with varying levels of optical density fading less than 22.6% may be produced within the scope of claim 1 merely from the disclosure on page 5, lines 1-3 and page 6, line 26 to page 7, line 29 with very little, if any, experimentation. Certainly, the resulting toners can exhibit an optical density fading of less than 22.6%, other than 10.3%, sufficient to enable the range of claim 1. Notably, claim 12 is amended herein to set forth a narrower range of 10.3% to less than 22.6%, which is also enabled.

Additional fine tuning, such as to produce the Chroma value ranges of claims 11-13, may involve some routine experimentation using the instructions of page 7, lines 8-

14 and 25-29. However, to the extent that some minimal experimentation is involved, the amount of such experimentation would be reasonable given the guidance available in the present specification and the known art.

Page 7 of the Office Action refers to a massive number of possible combinations of typical pigments for liquid electrostatic toners described in Diamond and alleges that undue experimentation would be required to produce the claim 1 toner particle. However, the teachings of Diamond are not dispositive. The present specification lists 11 carbon blacks, 12 specific purple or blue pigments, and 13 substantially lightfast pigment groups sufficient to enable claim 1. No requirement exists to enable the pigment list in Diamond. Applicant requests withdrawal of the enablement rejection in the next Office Action.

Claims 1-14, 16-18, 20 and 22-26 stand rejected under 35 USC 112, second paragraph as being indefinite for using the term "practically unchanged" in claim 26 and for failing to describe the methods used to print images for testing involving light fastness, Chroma, and change in Chroma. Applicant requests reconsideration.

Applicant notes that the term "practically unchanged" is understood by the context of page 6, lines 10-16 using such term and it is definite. The term encompasses values of change in Chroma that are zero or close enough to zero not to make any practical difference, as known to those of ordinary skill. "Practically unchanged" may be contrasted with a change of 3.45, described as a substantial deterioration.

Page 7, line 33 to page 8, line 6 of the present specification states that any of a wide variety of methods may be used for developing, fixing, fusing, etc. printed images to be tested. The Office Action does not establish with evidence that optical density fading, Chroma, or change in Chroma depend on the particular printing methods used. Thus, it would appear irrelevant that the claims are not limited to certain developing, fixing, fusing, etc. methods. While the claims may be broad, they are not indefinite. By their express terms, the claims encompass any printing method, except for new claim 27 limited to liquid toner electrophotographic printing. Consequently, all claims

are definite and Applicant requests withdrawal of the rejection in the next Office Action.

Applicant herein establishes adequate reasons supporting patentability of claims 1-14, 16, 18, 20, and 22-27 and requests allowance of all pending claims in the next Office Action.

Respectfully submitted,
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